

## **ENVIRONMENTAL STANDARDS AND EMISSION LEVELS**

In determining appropriate environmental standards for ADB projects, ADB will follow the standards and approaches laid out in the World Bank's *Pollution Prevention and Abatement Handbook*.<sup>1</sup> This handbook describes generally acceptable pollution prevention and abatement measures and emission levels. However, as in the case of the World Bank environmental assessment procedures,<sup>2</sup> the environment assessment for any individual project may recommend adoption of alternative emission levels and approaches to pollution prevention and abatement. This flexibility is required to best reflect national legislation and local conditions in determining the appropriate standards and emissions levels. In all such cases, the environment assessment report will provide justification for the levels and approaches chosen for the particular project or site.

Environmental standards are numerical concentrations of environmental parameters recommended to support or maintain a designated use of a resource in an ecosystem, area, or region. The significance of predicted changes - positive or negative - brought about by project impacts on the environment can be evaluated when the resulting environmental quality is compared to the relevant environmental standards. Environmental standards are established to protect human health and ensure the long-term sustainability of an environmental resource. Air quality standards are set to protect human health, while water quality standards are designed to support the intended use of water, and protect the aquatic ecosystem as well as human health. Soil quality standards are designed to protect agriculture, human health, and surface and groundwater resources. There are 2 kinds of standards: (i) ambient or sink, and (ii) emission or discharge.

### **Ambient Environmental Standards**

Ambient standards (often referred to as environmental criteria) are concentrations of environmental parameters in an environmental medium (e.g. air, water, and soil quality) that must not be exceeded, or levels of environmental quality (e.g. dissolved oxygen level in waters) that must be maintained. They generally define the prescribed limits to which levels of environmental resources may be permitted to fall, or the upper limits to which pollutants may be allowed to reach in the environment. Ambient standards may define the degree of environmental quality that must be maintained in an environmental resource to support its continued beneficial human use. While often set to protect human health, they may also be set to ensure the long-term sustainability of an environmental resource. An example is the setting of minimum quality standards for ecologically sensitive areas.

### **Discharge Standards**

Emission or discharge standards are the maximum concentration level of environmental parameters emitted or discharged to the environment. Emission standards are normally established on a desired level of abatement at the source that can be achieved through the application of best practicable abatement technologies. Emission or discharge standards are usually specific to an area or ecological zone, and may be set for specific industries. Discharge standards are set for emissions and effluents from projects and activities. They define the maximum acceptable quantity of pollutants that may be discharged into the ecosystem, area or region. They are set for specific pollutants and often stated as concentrations or discharge rates

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<sup>1</sup> World Bank 1999. *Pollution Prevention and Abatement Handbook: Toward Cleaner Production*. Washington, D.C.

<sup>2</sup> World Bank Operational Manual – OP 4.01 on Environmental Assessment. January 1999.

to reflect the temporal dimension. They are usually specific to an area or ecological zone, and may be set for specific industries.

Project-specific discharge standards should be based on the quantity of a pollutant that may be discharged without violating ambient standards for environmental resources. For this to be done, the receiving environment for the pollutant must be characterized in terms of existing levels. Predicted changes in concentrations resulting from the additional discharge should be compared against ambient standards.

### **Setting Environmental Standards**

All environmental standards should be considered tentative. Standards are based on current knowledge, environmental conditions, living standards, and technologies. As these conditions change, it may become necessary to revise the standards. It is often neither practical nor possible to introduce and enforce standards that would immediately rectify an environmental condition. Progressive environmental standards may be introduced with a specified timetable for implementation to give those concerned enough time to make adjustments that would reduce pollution emission levels without severe economic difficulties (e.g. operating issues, plant closures).

Where neither ambient nor discharge standards exist, there is a risk of uncontrolled ecological disruption and environmental degradation which may, in turn, reduce the quality of life for all inhabitants of the affected areas. At the very least, interim or initial minimum standards should be set by the EIA team and then subsequently modified as appropriate. One alternative is to begin with a minimum standard of environmental protection measures for all projects regardless of their type, size or location. As they are developed, subsequent ambient and discharge standards may supersede the standard environmental protection measures.

ADB normally recognizes national environmental standards in evaluating the EMP for projects. If national environmental standards do not exist or are considered inappropriate, ADB takes World Bank or World Health Organization guidelines into account. If the standards are deemed inappropriate, the executing agency could include a review of existing standards and recommend needed changes.

There are now interim quantitative water ecological quality criteria that, for example, would support a balanced and healthy aquatic ecosystem. This gap makes the evaluation of the significance of ecological impacts inconclusive.

### **Performance Standards**

Performance standards provide a results-based or goals-oriented approach to resolve inter-jurisdictional differences in methods, guidelines and practices. Specifically, performance standards identify what objectives are to be achieved environmental assessment, and environmental monitoring and compliance. However, flexibility is provided in the methodology used to demonstrate acceptable findings, which allows for different methods of measurement to be compared e.g. Method 'A' may be more complex, and provide a higher level of resolution than Method 'B', but both methods are proven to achieve a level of sensitivity that meets the regulatory environmental objective or standard. This approach is particularly applicable when multiple donor interests may be involved in a project. ADB encourages and supports DMCs to adopt it to develop a "one-window" approach to minimize duplication of efforts in situations

where multiple environmental processes or standards are represented by the donors and DMC itself.

## **Meeting Environmental Standards by Integrating Cleaner Production (CP) into the EMP**

Discharge standards define the conditions under which a project may or may not discharge effluent into the environment and, thus, the type and amount of treatment required for the effluent. An EIA includes the preparation of an EMP to ensure that a project meets the appropriate discharge standards. The EIA itself should include EMP to provide detailed design criteria for specific mitigation measures to meet the discharge standards.

The cost of installing and operating treatment facilities can be a very significant item in the total project budget and must not be overlooked in the project's financial feasibility study. The choice of a project location can also be influenced heavily by environmental standards. At present, choosing a site to minimize the investment requirements for effluent treatment can reduce overall project costs. Industrial projects are often grouped together to take advantage of cost reducing centralized effluent treatment and disposal facilities. Where there has been considerable development prior to the introduction of environmental standards, retrofitting projects to meet the standards can be even more costly than incorporating treatment facilities into new projects.

The CP/pollution prevention approach offers an opportunity to reduce waste generation from the source. Generally, it involves 4 approaches:

- (i) input substitution by employing less harmful and more degradable substances, thereby rendering wastes non-toxic, non-hazardous and enabling the application of recognized effective treatment processes for effluent polishing at lower cost;
- (ii) improvement of housekeeping through establishment of preventive maintenance measures, particularly by avoiding leakage and spillage of valuable raw materials with specified materials handling procedures;
- (iii) process modifications to apply more modern and efficient technologies, optimize use of raw materials, and enhance materials recovery, reuse, and recycle; and
- (iv) changes to end products by producing less harmful, recyclable outputs (e.g., water-based cosmetics, unbleached paper, pellet products rather than powder) by considering the lifecycle of the end products themselves.

Separately or in combination, all these approaches can reduce the cost of handling wastes to meet environmental standards, while at the same time improve productivity. The environmental assessment should include a review of the potential adoption of these approaches in reducing costs and environmental impacts of treated and untreated wastes.